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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/600,258

06/20/2003

Paul B. MacCready

AVI 1005-04US

7491

28327

7590

01/25/2006

THE LAW OFFICE OF JOHN A. GRIECCI  
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HERMOSA BEACH, CA 90254

EXAMINER

HOLZEN, STEPHEN A

ART UNIT

PAPER NUMBER

3644

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |  |                     |  |
|------------------------------|------------------------|--|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> |  | <b>Applicant(s)</b> |  |
|                              | 10/600,258             |  | MACCREADY ET AL.    |  |
|                              | <b>Examiner</b>        |  | <b>Art Unit</b>     |  |
|                              | Stephen A. Holzen      |  | 3644                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| ✓ 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)           | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments, filed 11/4/2005, with respect to the rejection(s) of claim(s) 1 and 17 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of oLangford.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langford (5,106,035).

Re - Claims 1, 3-7, 9-11, 14, 17-20: Langford III discloses an aircraft propulsion system using an air liquefaction and storage system having an electric motor for driving a propeller and an electrochemical fuel cell for receiving an oxidizer and a fuel. The air liquefaction system is used for receiving ambient air and providing oxidizer to the fuel cell. Langford further discloses a cryogenic liquid fuel tank (205), a compressor (221), a pump (208), a oxidizer reservoir (210), a sensor (209) that is used to input into the controller which determines when to activate the pump and controller for extracting an oxidizer from the atmosphere. (see Col. 3, lines 1-3).

Langford, discloses every aspect of the applicant's invention except supplying a gaseous reactant at a pressure less than one atmosphere. It would have been obvious to one having

ordinary skill in the art at the time the invention was made to supply a gaseous reactant at a pressure less than one atmosphere, since it has been held that where the general conditions of a claim are disclosed in one prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Re – Claims 2, 8, 16: Langford teaches a cruise altitude between 55-70k ft. (see Figure 1).

Re - Claims 12, 13, 15: Langford teaches a fuel source being a hydrogen tank containing liquid hydrogen and a heat source for controllably boiling the liquid hydrogen (see Col.4, lines 17-25). Langford further inherently discloses the limitations of claim 13 since but for the regulation of the boiling rate, no control over power would be possible.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


G. J. Cooley et al (3,346,718) discloses that it is well known in the art to use a heating source in a tank for supplying gaseous reactant to a fuel cell at a rate determined by the boiling-rate of the reactant (see Col. 2, lines 59-64), and wherein the heat source is configured to increase the boiling rate of the reactant to a level appropriate to supply the gaseous reactant to the fuel cell at a substantially the operating-rate of the flux and at the given pressure. (see Col. 2, lines 59-62 and Figure 1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen A. Holzen whose telephone number is 571-272-6903. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sah



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PRIMARY EXAMINER